

invention.

Claim 40 is not new matter because the specification describes that the initial application of microwave radiation affixes the glass and plastic together not just once but on six separate occasions: first, in the Summary lines 47-48, "The present invention also includes a method of forming a glass and plastic composite using microwave radiation that is applied for between about 0.01 to 100 minutes."; second, in the Summary lines 57-58, "The present invention also includes a method of forming a glass and plastic composite using microwave radiation wherein the microwave radiation is applied at between about 10 to 100,000 watts and at a frequency of between about 3Ghz to 3000 Ghz."; third, the last two lines of the Summary, "It is a characteristic of the present invention to provide a method of differentially heating the glass and the plastic during the bonding process of forming the resultant optical composite."; fourth, fifth, and sixth, lines 68-73 of the Detailed Description of the Invention, "In one preferred embodiment, the core is made of glass and polymer cladding is bonded on to the optic fiber using heat generated from microwave radiation absorbed by the optic fiber." "In another preferred embodiment, the core is made of glass and a polymer sheath is bonded on to the optic fiber using heat generated from microwave radiation absorbed by the optic fiber." "In another preferred embodiment, the core is made of glass and a buffer coating is bonded on to the optic fiber using heat generated from microwave radiation absorbed by the optic fiber." In none of these instances does the specification mention using anything but microwave radiation to affix the glass to the plastic together. Thus, one skilled in the art, reading the specification at the time the application was filed, would have realized that applicant had possession of applying microwave radiation to affix the glass and plastic together.

Further, it is likely that one skilled in the art would first read the Abstract before proceeding to the Specification because the Abstract provides a synopsis of what the invention is truly about. The Abstract of the present invention is notable in two respects. First, its use of optical contacting and microwave enhancement of sealant kinetics limitations. Second, it specifically does **not** say that a sealant is used to hold the glass and the plastic together. Rather, on line 5 it says that "vacuum pressure and optical contacting are used to hold the glass and plastic portions together." I have since dropped the vacuum related claims because this feature is already known to the art. Thus, one skilled in the art, reading the patent disclosure as a whole would have known that it **was** optical contacting and not the sealant that was primarily what was used to hold the glass and plastic portions together.

Optical contacting is a term of art by which two surfaces are adhered together through molecular attraction without the use of an adhesive (see www.opticsforresearch.com/opticalcmp/optcontact.html). It is a technique which is used in a precision optical shop when it is necessary to eliminate the dimensional uncertainty of wax or adhesive. Optical contacting is most often used in high-power laser applications where optical cement could be damaged, or at wavelengths where optical cement will not transmit, such as in the ultraviolet. Optical contacting is also used when the work requires a very tight optical tolerances, usually better than 0.02 mm.

Therefore, because of the above amendments that amend the specification with limitations disclosed in the abstract and because the specification already discloses use of microwave radiation to bond glass and plastic together, applicant submits that claim 40 is

not new matter.

In addition, because of the above amendments that amend the Specification with limitations disclosed in the Abstract, applicant submits that claims 15, 17-19, 21-22, 36-37, and 41-44 are also now properly supported by the Specification.

CLAIM REJECTION 35 U.S.C. §102

“Under 35 U.S.C §102, anticipation requires that each and every element of the claimed invention be disclosed in a prior art reference.” “ Every element of the claimed invention must be literally present.”

Claim 15 stands rejected under 35 U.S.C. §102(b) as being anticipated by *Kohan* (U.S. Patent 5,851,328). *Kohan* uses radiation to cure and adhesive that is evenly distributed between two wafer lenses (Column 14, lines 14-32). In contrast, claim 15 does not use any sort of adhesive. Thus, the adhesive element of *Kohan* is missing from claim 15. Further, in claim 40 which depends from claim 15, the sealant /adhesive is placed only on the periphery of the composite, not evenly distributed as in *Kohan*. Thus, even indirectly, claim 15 lacks the adhesive distribution element of *Kohan*.

In addition, the primary purpose of microwave radiation in the present invention is to bond the two different substrates together by differentially heating them (last 2 lines of Summary). Thus, claim 15 lacks the radiation-used-to-cure element of *Kohan* because the present invention is capable of functioning either without any ‘adhesive’ at all, or by using an adhesive that does not require radiation to cure. Therefore, because *Kohan* teaches the use of microwave radiation only to cure adhesives , rather than to differentially heat the substrates, the present invention is not anticipated by *Kohan*.

Finally, Applicant notes with appreciation the Examiner’s indication of allowable subject matter in claims 19,21, 22, 37, 43, and 44. Applicant appreciates the Examiner’s review of the present application and respectfully requests reconsideration in light of the above amendments and remarks. Each of the Examiner’s rejections has been addressed.

Accordingly, it is respectfully submitted that the application is in condition for allowance. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the applicant would welcome a collect telephone call at the Examiner’s convenience to the telephone number indicated below.

Respectfully submitted,

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The present invention also includes a method of forming a glass and plastic composite using optical contacting to hold the glass and plastic portions together.

The present invention also includes a method of enhancing the kinetic reaction strength of a sealant using microwave radiation.

It is a characteristic of the present invention to provide a method of optically contacting together the glass and the plastic during the bonding process of forming the resultant optical composite.

It is a characteristic of the present invention to provide a method of enhancing the kinetic reaction strength of a sealant using microwave radiation.

In another preferred embodiment, the core is made of glass and the polymer cladding is optically contacted on to the optic fiber using heat generated from microwave radiation absorbed by the optic fiber.

F1
15. A method of making a glass and plastic composite comprising:

forming a glass having a center and a margin to a particular shape;

forming a plastic having a margin and a center to a shape essentially adapted to receive the shape of the glass; and

applying microwave radiation for a time effective to anneal the formed glass and the formed plastic together.

F2
19. A method of making a glass and plastic composite comprising:

forming a glass having a center and a margin to a particular shape;

forming a plastic having a margin and a center to a shape essentially adapted to receive the shape of the glass; and

applying microwave radiation for a time effective to affix the formed glass and the formed plastic together; and

applying sealant only to the margin of the glass and the margin of the plastic, whereby the center of the glass and the center of the plastic are devoid of the sealant.

F3
40. The method of claim 15 wherein a sealant is applied only to the margin of the glass and the margin of the plastic after the microwave radiation has annealed the glass and the plastic together, whereby the center of the glass and the center of the plastic remain devoid of sealant.